What is claimed is:

1. In a control device including a combined temperature sensor and heating unit, the control device comprising a bridge circuit having a plurality of arms, one arm of the bridge circuit comprising a heating element, means for directing a sensing current through the heating element, means for detecting a condition wherein the bridge circuit is in an essentially electrically balanced state, and means for directing a heating current through the heating element in response to an essentially electrically unbalanced condition, wherein the control device comprises means for repeatedly interrupting a flow of the sensing current to the heating element,

the improvement comprising means for selecting start and stop points for the sensing current, and for causing sensing current to flow only between said start and stop points.

2. The improvement of Claim 1, wherein the selecting means comprises a zener diode.

3. The improvement of Claim 1, wherein the selecting means comprises a first zener diode for determining a start point for the sensing current, and a second zener diode for determining a stop point for the sensing current.

4. The improvement of Claim 1, wherein the selecting means comprises a quad comparator.

5. The improvement of Claim 1, wherein the selecting means includes a SIDAC.

6. The improvement of Claim 1, wherein the selecting means comprises a SIDAC for determining a start point for the sensing current, and a zener diode for determining a stop point for the sensing current.

7. The improvement of Claim 1, wherein the selecting means includes a switch and an optocoupler, the optocoupler being connected to receive a supply voltage, the optocoupler being connected to an RC network, the optocoupler being connected to operate the switch so as to generate pulses of sensing current.

8. The improvement of Claim 1, wherein the selecting means includes means for generating a sensing pulse having an amplitude which is essentially independent of a supply voltage.

9. The improvement of Claim 1, wherein each start point is displaced from a beginning of a half-cycle of a supply voltage.

10. The improvement of Claim 8, wherein each sensing pulse has a duration which is less than about 200 microseconds.

11. The improvement of Claim 10, wherein the sensing pulses have a duration which is not greater than about 150 microseconds.

12. The improvement of Claim 8, wherein each sensing pulse has a duration in a range between about 100 microseconds and about 4 milliseconds.

13. The improvement of Claim 8, wherein each sensing pulse has a start point which is displaced from a beginning of a half-cycle of the supply voltage, and wherein each sensing pulse has a duration which is less than about 200 microseconds.

14. A current reduction circuit for generating sensing pulses and for directing said sensing pulses to a heating element comprising an arm of a bridge circuit, the current reduction circuit comprising:

a) an electronic switch connected to a heating element in a bridge, the electronic switch comprising means for creating sensing pulses and for directing said sensing pulses to the heating element, and

b) means for activating said switch at selected times and means for

deactivating said switch at selected times, wherein the activating and deactivating means cause the switch to generate sensing pulses having a desired duration,

wherein the activating means activates said switch at a start point which is displaced from a beginning of a half-cycle of a supply voltage.

15. The current reduction circuit of Claim 14, wherein the activating and deactivating means both include a zener diode.

16. The current reduction circuit of Claim 14, wherein the activating means comprises a first zener diode which controls a start point for each of said sensing pulses, and wherein the deactivating means comprises a second zener diode which controls a stop point for each of said sensing pulses.

17. The current reduction circuit of Claim 14, wherein the activating and deactivating means include a quad comparator.

18. The current reduction circuit of Claim 14, wherein the activating means comprises a SIDAC.

19. The current reduction circuit of Claim 14, wherein the activating means comprises a SIDAC for determining a start point for each of the sensing pulses, and wherein the deactivating means comprises a zener diode for determining a stop point for each of the sensing pulses.

20. The current reduction circuit of Claim 14, wherein the switch is operated by an optocoupler, the optocoupler being connected to receive said supply voltage, the optocoupler being connected to an RC network.

21. The current reduction circuit of Claim 14, wherein the activating and deactivating means comprise means for generating a sensing pulse having an amplitude which is essentially independent of the supply voltage.

22. The current reduction circuit of Claim 14, wherein each sensing

pulse has a duration which is less than about 200 microseconds.

23. The current reduction circuit of Claim 14, wherein each sensing pulse has a duration which is not greater than about 150 microseconds.

24. The current reduction circuit of Claim 14, wherein each sensing pulse has a duration in a range between about 100 microseconds and about 4 milliseconds.

25. A method of operating a control device including a combined temperature sensor and heating unit, the control device comprising a bridge circuit having a plurality of arms, one arm of the bridge circuit comprising a heating element, means for directing a sensing current through the heating element, means for detecting a condition wherein the bridge circuit is in an essentially electrically balanced state, and means for directing a heating current through the heating element in response to an electrically unbalanced condition,

the method comprising the step of repeatedly interrupting a flow of the sensing current to the heating element, wherein the sensing current is provided as a series of pulses, wherein each pulse begins substantially after a beginning of a half-cycle of a supply voltage.

26. The method of Claim 25, including determining a desired turn-off point for each pulse, the turn-off point being selected to provide a pulse amplitude sufficiently high to accomplish sensing, but less than a maximum amplitude of the supply voltage.

27. The method of Claim 26, including selecting a turn-on point for each pulse, the turn-on point being selected to be sufficiently close to the turn-off point so as to minimize current dissipation while avoiding inductive effects.

28. The method of Claim 27, wherein the turn-on point is selected to be less than about 200 microseconds before the turn-off point.

29. The method of Claim 28, wherein the turn-on point is selected to be less than about 150 microseconds before the turn-off point.

30. The method of Claim 27, wherein the turn-off point is selected to be about 60 degrees or less at design supply voltage.

31. A method of operating a control device including a combined temperature sensor and heating unit, the control device comprising a bridge circuit having a plurality of arms, one arm of the bridge circuit comprising a heating element, means for directing a sensing current through the heating element, means for detecting a condition wherein the bridge circuit is in an essentially electrically balanced state, and means for directing a heating current through the heating element in response to an electrically unbalanced condition,

the method comprising the step of repeatedly interrupting a flow of the sensing current to the heating element, wherein the sensing current is provided as a series of pulses, and wherein the method also includes selecting a starting point for each pulse, wherein the starting point is selected from a range that begins in a vicinity of a zero-crossing point of a supply voltage and ends in a vicinity of a maximum point of the supply voltage.

32. The method of Claim 31, including determining a desired turn-off point for each pulse, the turn-off point being selected to provide a pulse amplitude sufficiently high to accomplish sensing, but less than a maximum amplitude of the supply voltage.

33. The method of Claim 32, wherein the starting point for each pulse is selected to be sufficiently close to the turn-off point so as to minimize current dissipation while avoiding inductive effects.